



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

SW

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,310	10/24/2003	Chun-Cheng Tsao	65.0338DIV	1505

7590 12/01/2004

Legal Department, NPTest, LLC
c/o Lasagne Edwards
150 Baytech Drive
San Jose, CA 95134-2302

EXAMINER

MCDONALD, SHANTESE L

ART UNIT PAPER NUMBER

3723

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/693,310	Applicant(s) TSAO ET AL.	
	Examiner Shantese L. McDonald	Art Unit 3723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 16 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-18 and 21-28 is/are allowed.
- 6) ☐ Claim(s) 19,20 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. in view of Masumura et al.

Wei et al. teaches a method of forming a thickness map of a semiconductor sample providing an optical tool, selected from the group consisting of a reflectance spectrometer, a confocal microscope and an ellipsometer, (col. 4, lines 30-32), mounting the wafer portion on a viewing stage, 130, positioned for measuring the wafer portion by the optical tool, and measuring a thickness of the wafer portion at at least five locations on the wafer portion, a first location being near the center of the wafer and one of the at least four remaining locations being near each of the four corners of the wafer portion, (col. 5, lines 11-20), and determining the thickness difference between the center and each of the four remaining locations and determining thickness uniformity across the wafer portion from the at least five measurements, (col. 4, lines 55-60). Wei et al. teaches all the limitations of the claims except for the semiconductor sample being a mirror polished wafer. Masumura et al. teaches finding the thickness measurement of a mirror polished wafer, (col. 6, lines 22-35).

Art Unit: 3723

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to perform the thickness measurement of Wei et al. on a mirror polished wafer, as taught by Masumura et al., in order to vary measurement data on various types of samples and specimens.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. in view of Dischiano.

Wei et al. teaches all the limitations of the claims except for a fixture for mounting a lapping puck having a semiconductor wafer portion thereon, the fixture adjusted such that when mounted on the fixture, the lapping puck having the wafer portion thereon is positioned substantially on the viewing stage, the lapping puck configured to be mountable on a lapping tool. Dischiano teaches a fixture, 106, having a lapping puck, 102, with a wafer portion, 100, thereon. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide the invention of Wei et al. with the fixture and lapping puck, as taught by Dischiano, in order to enhance the specimen's mounting capabilities.

Allowable Subject Matter

Claims 1-18 and 21-28 are allowed.

Response to Arguments

Applicant's arguments filed 8/16/04 have been fully considered but they are not persuasive.

In reference to claims 19 and 20, the applicant argues that Wei's invention is directed to increasing film thickness measurement accuracy. The applicant admits that the Wei reference does indeed teach measuring the thickness of the wafer at at least five locations on the wafer, with the first location being near a center of the wafer and one of the at least four remaining locations being near each of the four corners. This is all that claim 19 claims, it does not mention how the thickness measurements are analyzed or utilized. Therefore the Wei reference does indeed read on claim 19. In reference to claim 20, the limitations of the claim is a step of determining the difference between the center and each of the four remaining locations. The Wei reference teaches taking the thickness measurements of the different locations over 15 runs, and plotting the results in tables 1 and 2. The table is listed in column form comparing the measurement of the center, and the four corners, therefore if one compares the numbers listed in the chart for each run, one can determine the thickness uniformity. The present invention does not claim how or by what instrumentation, the limitation of determining the thickness uniformity is performed.

In reference to claim 20, the Wei reference teaches a "conventional high precision stage", (col. 5, lines 17-19). The Wei reference does not mention how the wafer is adhered to the stage. The Dischiano reference teaches using a wafer puck to adhere a wafer to a stage. It is a well known fact in the art to utilize

Art Unit: 3723

a puck in order to more efficiently hold the specimen during machining or measurement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shantese L. McDonald whose telephone number is (703) 308-8722. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on (703) 308-2687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph J. Hail, III
Supervisory Patent Examiner
Technology Center 3700

S.L.M.
November 16, 2004